

Trend Study 14-2-99

Study site name: Brushy Basin .

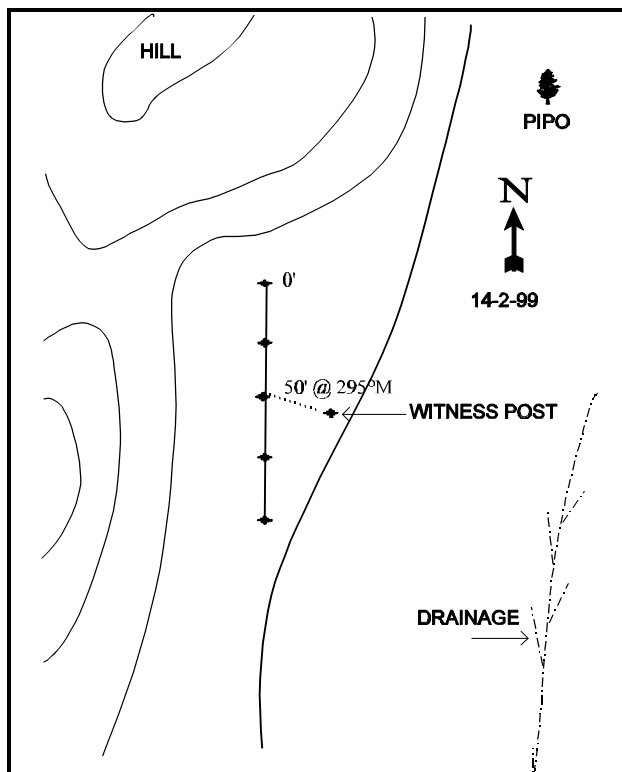
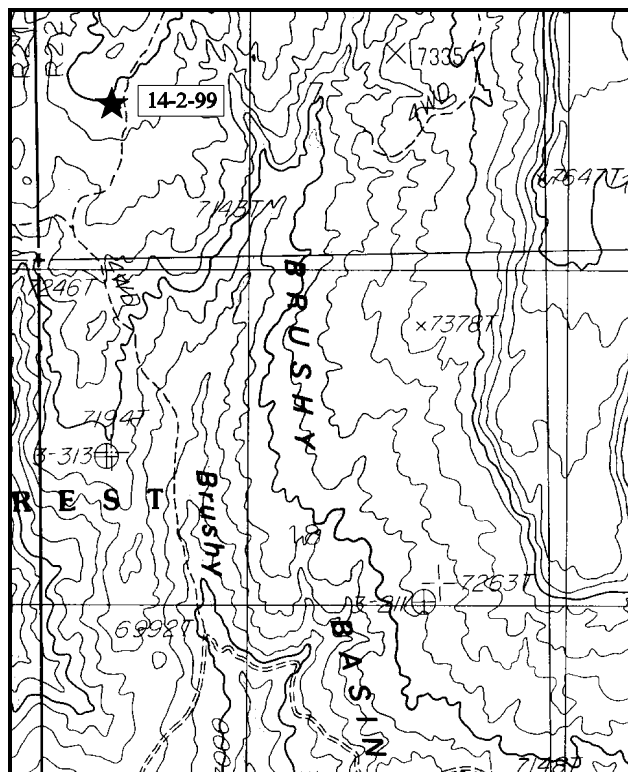
Range type: Chained, Cabled, Seeded P-J.

Compass bearing: frequency baseline 180°M.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

LOCATION DESCRIPTION

From Blanding, go northwest on the mountain road (toward the Causeway, Elk Ridge) to a junction 0.6 miles beyond the Forest Service boundary. Turn left. After 0.05 miles, go straight through an intersection and continue 0.6 miles to a fork. Turn left. Go 0.75 miles to another fork, turn right. Turn right again after 0.7 miles. Proceed 0.4 miles and stay left at the fork. After 0.3 miles you reach the edge of a chaining. Continue 0.1 miles to a fork. Turn right. Go 0.1 miles, pass a stockpond and continue 0.2 miles to a witness post (green fence post) 10 feet off the west side of the road. From the witness post, walk 50 feet at 295°M to the 200 stake. The 0 foot baseline stake is found 200 feet to the north, and has browse tag #7869 attached.



Map Name: Manco Jim Butte

Diagrammatic Sketch

Township 35S , Range 22E , Section 7

UTM 4178624.597 N, 627583.257 E

DISCUSSION

Trend Study No. 14-2 (35-2)

This transect is located in Brushy Basin, part of the rolling country south of the Abajo Mountains. The area is managed by the U.S. Forest Service and is part of a 1,400 acre chaining and seeding project done in 1971. The study is in the foothills at an elevation of 7,400 feet. It has a slope of approximately 10%, with a south-southeast exposure. Seasonally, the washes in the area drain southward. Water is available in a stock pond about 0.2 of a mile down the road.

The Brushy Basin unit is one of three units on a rest-rotation grazing system on the Camp Jackson Allotment. The current agreement is for 300 cattle (1589 AUMs) grazing from June 16 to October 15. The Brushy Basin unit is grazed 2 months for 2 years and rested the third year. This transition zone of Ponderosa pine, oakbrush-serviceberry, and pinyon-juniper-sagebrush is generally a spring and fall use area for deer. A pellet group transect on the site estimates 14 deer days use/acre (35 deer days use/ha), 15 elk days use/acre (37 elk days use/ha), and 33 cow use days/acre (82 cow days use/ha) in 1999. Cattle pats appear to be from last fall.

This transition zone site has variable soils, generally deep loam surface soils with clay loam subsoil. Soil at the site is moderately deep with an estimated effective rooting depth of almost 17 inches. Soil texture is a sandy clay with a neutral pH (6.6). It contains 6% surface rock cover with most of the subsurface rock concentrated near the surface. Litter cover currently ('99) makes up 54% of the ground cover, with most of the litter as persistent debris left from the chaining. However, ground cover is extremely variable as erosion appears to be a problem within the scattered open bare interspaces. There are some small gullies on the site and evidence of some sheet erosion. Roads and trails in the area exhibit active soil movement from high intensity summer storm events.

Visually, there is a dominant over story of Utah serviceberry and pinyon-juniper with mountain big sagebrush-bitterbrush and a fairly good grass understory. The key browse species, considering numbers and use, are serviceberry, bitterbrush, and mountain big sagebrush. Utah serviceberry density was estimated at 140 plants/acre in 1994, averaging more than six feet in height and seven feet across. Density has remained similar in 1999 at 100 plants/acre. Use is currently moderate on available plants, but many are only partly available due to their height. Mountain big sagebrush is the most abundant shrub on the site and produces the most forage. Density of mountain big sagebrush was 3,333 plants/acre in 1986, 78% of which were young. The population declined slightly by 1994 to 2,320 plants/acre as the stand became more mature. Seedlings were abundant however with a biotic potential (proportion of seedlings to the population) of 57%. Data from 1999 shows a slight increase in sagebrush density to 2,920 plants/acre. The stand still has a large portion of young plants and will likely expand further in the future. Seedlings are numerous with a biotic potential of 56% and young plants account for 45% of the population. These plants show mostly light hedging since 1986.

Bitterbrush is not abundant and scattered throughout the site. It has a prostrate growth form which received very heavy use in 1986. Density increase to 640 plants/acre in 1994 mostly due to the much larger sample now used. Utilization was light in 1994, increasing to moderate and heavy in 1999. Vigor has remained normal with no decadent plants sampled in 1999.

Broom snakeweed's density has decreased significantly from 7,932 plants/acre in 1986 to only 540 plants/acre in 1994, a decrease of 93%. The current ('99) population of 580 plants/acre appears to have a stable age structure. Dwarf rabbitbrush density has decreased from 6,966 plants/acre to only 120 plants /acre, a 98% decrease. It appears that some of the change in density may have been due to identification problems with mat penstemon. Data from 1999 estimate a population of 800 plants/acre with a large proportion consisting of seedlings and young with may indicate an expanding population. Pinyon pine are present in the chaining at an estimated density of 87 trees/acre in 1994. Junipers were less prevalent at 48 trees/acre in

1994. Tree density and size have increased. Current density is estimated at 95 pinyon and 37 juniper trees/acre. Average diameter of pinyon is nearly 4 inches while that of juniper is nearly 4 ½ inches. Twenty percent of the juniper trees sampled consist of mature trees which were knocked down (tipped over) by the chaining but still living.

Herbaceous species are important on deer spring-fall transition range and elk winter range. In 1986, there was a vigorous and diverse stand of native and seeded grasses. Although grazing had been heavy, the grasses appeared healthy and young plants were evident. Since then the herbaceous understory has declined as shrubs and trees have increased. The extended drought has also been with us since 1986, exacerbating the grazing effects and competition with browse species. The most common grasses are intermediate wheatgrass, crested wheatgrass, and muttongrass. Nested frequency for perennial grasses have decreased significantly between 1986 and 1994, while nested frequency for forbs increased substantially. However, grasses accounted for 73% of the herbaceous cover while forbs only made up 27%. Sum of nested frequency of grasses and forbs declined slightly between 1994 and 1999. The most abundant forbs are spring parsley, mat penstemon, and one flower helianthella. The variety of native forbs found on the site provide some spring forage, but none are very numerous. The seeded yellow sweet clover was heavily utilized in 1994.

1986 APPARENT TREND ASSESSMENT

Depending on the management objective for this area, the trend in this community is up. However, woody species are increasing somewhat to the detriment of grasses. Some are undesirable species which include, broom snakeweed, pinyon, and juniper. The sagebrush and serviceberry may also have increasing populations. Yellow sweet clover, alfalfa, and bitterbrush are being heavily utilized. The grasses must be allowed to maintain a competitive ability (carbohydrate reserves) with the low increaser subshrubs by not overgrazing. With a high percent litter cover, the soil trend is improving.

1994 TREND ASSESSMENT

Nested frequency of herbaceous understory has decreased from 1986 to 1994, mostly due to the loss of grasses, possibly from competition from the larger shrubs and the extended drought, coupled with early summer livestock use. Shrub density for the key species has decreased, but the biotic potential (proportion of seedlings to population) for mountain big sagebrush is very high at 57%. Sagebrush and Utah serviceberry are both only lightly hedged and in good vigor. Bitterbrush has increased contrary to what was predicted in the past trend assessment. Bare ground cover increased from 16% to 20%. Rock and pavement cover are stable at nearly 6%. Litter cover has decreased mostly because of the prolonged drought.

TREND ASSESSMENT

soil - stable

browse - stable

herbaceous understory - down, mostly because of the large loss of grasses to drought

1999 TREND ASSESSMENT

Trend for soil is stable. Percent cover for bare ground increased slightly while cover for litter increased. However, ground cover is not continuous and there is some erosion occurring. Trend for browse is up for mountain big sagebrush. Density has increased, utilization is light to moderate, vigor improved, and recruitment good due to high numbers of seedlings and young. Serviceberry and bitterbrush are moderate to heavily utilized, but appear to have healthy, stable populations. Trend for the herbaceous understory is down slightly. The increase in the density and size of shrubs and especially trees appears to have negatively effected the understory. Sum of nested frequency of perennial grasses has declined slightly while frequency of perennial forbs has remained similar to 1994 estimates. Composition of grasses is diverse but dominated by seeded grasses (crested and intermediate wheatgrass) which combine to produce 81% of the grass cover.

Since 1994, nested frequency of intermediate wheatgrass has declined significantly, while frequency of crested wheatgrass has increased slightly. This change would be driven by long term drought which would favor crested wheatgrass. The composition of forbs is also diverse but only a few species are common.

TREND ASSESSMENT

soil - stable

browse - up

herbaceous understory - down slightly

HERBACEOUS TRENDS --

Herd unit 14 , Study no: 2

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'86	'94	'99	'86	'94	'99	'94	'99
G	Agropyron cristatum	_b 198	_a 76	_a 112	69	31	47	1.57	2.71
G	Agropyron intermedium	_{ab} 410	_b 218	_a 152	152	78	59	7.75	3.11
G	Bromus inermis	_b 26	_a -	_a -	12	-	-	-	-
G	Bromus japonicus (a)	-	1	6	-	1	2	.00	.03
G	Bromus tectorum (a)	-	-	2	-	-	1	-	.00
G	Carex spp.	_b 80	_a 43	_a 22	34	18	9	.76	.41
G	Koeleria cristata	-	3	1	-	1	1	.03	.00
G	Oryzopsis hymenoides	-	1	3	-	1	1	.01	.03
G	Poa fendleriana	_b 120	_a 90	_a 87	46	37	37	1.19	.85
G	Sitanion hystrix	_b 38	_{ab} 27	_a 6	18	10	4	.24	.02
G	Stipa spp.	2	-	-	1	-	-	-	-
Total for Annual Grasses		0	1	8	0	1	3	0.00	0.03
Total for Perennial Grasses		874	458	383	332	176	158	11.55	7.15
Total for Grasses		874	459	391	332	177	161	11.56	7.19
F	Allium spp.	-	2	3	-	1	1	.00	.00
F	Arabis spp.	_a -	_{ab} 1	_b 7	-	1	3	.00	.04
F	Astragalus miser	5	4	4	3	3	3	.21	.21
F	Cirsium spp.	3	6	10	2	3	4	.01	.12
F	Crepis acuminata	_a -	_{ab} 2	_b 8	-	1	4	.00	.04
F	Cymopterus spp.	_a -	_b 43	_b 41	-	17	20	.33	.50
F	Eriogonum elatum	-	3	-	-	2	-	.03	-
F	Eriogonum racemosum	4	4	10	2	3	5	.04	.07
F	Helianthella uniflora	_a -	_b 6	_b 13	-	3	6	.09	.42
F	Hymenoxys acaulis	-	8	6	-	3	3	.21	.09
F	Lappula occidentalis (a)	-	3	-	-	1	-	.00	-
F	Lactuca serriola	_a -	_b 9	_a -	-	3	-	.02	-
F	Lesquerella fendleri	16	25	19	9	11	10	.05	.05
F	Lupinus spp.	_a -	_a 1	_b 7	-	1	4	.15	.19

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'86	'94	'99	'86	'94	'99	'94	'99
F	Machaeranthera grindelioides	_b 8	_a -	_{ab} 5	3	-	2	-	.06
F	Melilotus officinalis	_a -	_b 16	_a 5	-	6	2	1.01	.04
F	Medicago sativa	-	-	3	-	-	2	.15	.03
F	Penstemon caespitosus	_a -	_b 47	_b 53	-	19	21	1.43	1.88
F	Pedicularis centranthera	_a -	_b 7	_a -	-	3	-	.31	-
F	Penstemon pachyphyllus	8	3	6	5	1	3	.03	.06
F	Phlox longifolia	-	6	-	-	2	-	.01	-
F	Polygonum douglasii (a)	-	_a 6	_b 22	-	2	10	.01	.05
F	Tragopogon dubius	3	8	1	2	5	1	.05	.00
F	Trifolium gymnocarpon	-	_b 3	_a 3	-	1	1	.15	.00
F	Unknown forb-perennial	_b 9	_a -	_a -	5	-	-	-	-
Total for Annual Forbs		0	9	22	0	3	10	0.01	0.05
Total for Perennial Forbs		56	204	204	31	89	95	4.33	3.84
Total for Forbs		56	213	226	31	92	105	4.35	3.89

Values with different subscript letters are significantly different at $\alpha = 0.10$

BROWSE TRENDS --

Herd unit 14 , Study no: 2

Type	Species	Strip Frequency		Average Cover %	
		'94	'99	'94	'99
B	Amelanchier utahensis	7	5	3.05	3.33
B	Artemisia tridentata vaseyana	36	50	5.21	6.88
B	Cercocarpus montanus	1	2	-	-
B	Chrysothamnus depressus	6	13	.15	.45
B	Chrysothamnus nauseosus	1	0	-	-
B	Echinocereus engelmannii	0	0	-	-
B	Gutierrezia sarothrae	15	13	.49	.21
B	Juniperus osteosperma	0	2	.81	1.16
B	Juniperus osteosperma (chained)	0	0	-	-
B	Opuntia spp.	3	4	.15	.38
B	Pinus edulis	0	1	.94	3.52
B	Purshia tridentata	23	18	2.91	3.42
B	Quercus gambelii	0	3	1.00	.76
B	Yucca spp.	1	1	.63	.00
Total for Browse		93	112	15.37	20.13

CANOPY COVER --

Herd unit 14 , Study no: 2

Species	Percent Cover 09
Amelanchier utahensis	4
Juniperus osteosperma	1
Pinus edulis	2

BASIC COVER --

Herd unit 14 , Study no: 2

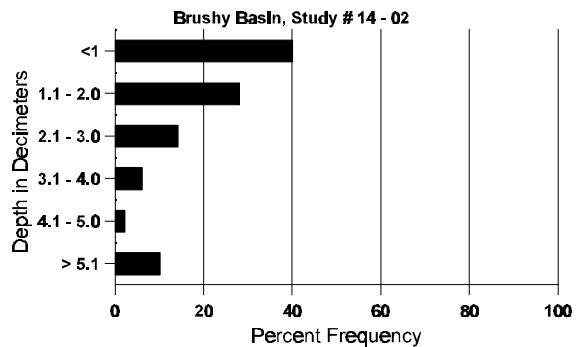
Cover Type	Nested Frequency 04 09		Average Cover %		
	04	09	'86	'94	'99
Vegetation	306	276	4.75	31.59	30.04
Rock	147	126	4.50	4.86	6.09
Pavement	123	133	.75	.30	1.18
Litter	383	384	73.50	43.61	53.56
Cryptogams	8	6	.25	.04	.06
Bare Ground	254	253	16.25	20.18	27.41

SOIL ANALYSIS DATA --

Herd Unit 14, Study # 02, Study Name: Brushy Basin

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	dS/m
16.6	62.4 (18.1)	6.6	46.9	10.6	42.6	2.9	6.8	102.4	0.6

Stoniness Index



PELLET GROUP DATA --

Herd unit 14 , Study no: 2

Type	Quadrat Frequency 04 09		Pellet Transect Days Use/Acre (ha) 09
	04	09	
Rabbit	6	30	N/A
Elk	3	6	15 (37)
Deer	5	17	14 (35)
Cattle	-	4	33 (81)

BROWSE CHARACTERISTICS --

Herd unit 14 , Study no: 2

A Y G R E		Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Amelanchier utahensis																		
S	86	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	94	2	-	-	-	-	-	-	-	-	2	-	-	40			2	
	99	2	-	-	-	-	-	-	-	-	2	-	-	40			2	
M	86	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	
	94	7	-	-	-	-	-	-	-	-	7	-	-	140	81	91	7	
	99	1	-	-	-	3	-	-	1	-	5	-	-	100	74	75	5	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'86		00%			00%			00%										
'94		00%			00%			00%			-29%							
'99		60%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)														'86	0	Dec:	-	
														'94	140		-	
														'99	100		-	
Artemisia tridentata vaseyana																		
S	86	6	-	-	-	-	-	-	-	-	6	-	-	200			6	
	94	156	-	-	-	-	-	-	-	-	156	-	-	3120			156	
	99	189	-	-	-	-	-	-	-	-	189	-	-	3780			189	
Y	86	67	11	-	-	-	-	-	-	-	67	-	10	1	2600		78	
	94	7	-	-	-	-	-	-	-	-	7	-	-	140			7	
	99	65	1	-	-	-	-	-	-	-	66	-	-	1320			66	
M	86	15	6	1	-	-	-	-	-	-	19	1	2	733	14	22	22	
	94	97	-	1	2	-	-	-	-	-	89	-	11	2000	25	29	100	
	99	53	14	2	2	-	-	-	-	-	71	-	-	1420	23	38	71	
D	86	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	94	9	-	-	-	-	-	-	-	-	9	-	-	180			9	
	99	8	-	-	1	-	-	-	-	-	9	-	-	180			9	
X	86	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	94	-	-	-	-	-	-	-	-	-	-	-	-	20			1	
	99	-	-	-	-	-	-	-	-	-	-	-	-	40			2	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'86		17%			01%			13%			-30%							
'94		00%			.86%			09%			+21%							
'99		10%			01%			00%										
Total Plants/Acre (excluding Dead & Seedlings)														'86	3333	Dec:	0%	
														'94	2320		8%	
														'99	2920		6%	

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Cercocarpus montanus																		
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	1	-	-	-	-	-	-	-	-	-	1	-	-	20	47	45	1
	99	-	-	2	-	-	-	-	-	-	2	-	-	-	40	43	43	2
X	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'86		00%			00%			00%										
'94		00%			00%			00%			+50%							
'99		00%			100%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'86	0	Dec:	-			
												'94	20		-			
												'99	40		-			
Chrysothamnus depressus																		
S	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
	99	17	-	-	-	-	-	-	-	-	17	-	-	-	340			17
Y	86	5	-	-	-	-	-	-	-	-	5	-	-	-	166			5
	94	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	99	32	-	-	-	-	-	-	-	-	32	-	-	-	640			32
M	86	204	-	-	-	-	-	-	-	-	204	-	-	-	6800	2	11	204
	94	4	-	-	-	-	-	1	-	-	5	-	-	-	100	6	15	5
	99	4	2	-	-	-	-	-	-	-	6	-	-	-	120	6	15	6
D	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	1	-	-	-	-	1	-	-	-	-	-	2	40			2
X	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'86		00%			00%			00%			-98%							
'94		00%			00%			00%			+85%							
'99		08%			00%			05%										
Total Plants/Acre (excluding Dead & Seedlings)												'86	6966	Dec:	0%			
												'94	120		0%			
												'99	800		5%			

A G R E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Chrysothamnus nauseosus																		
Y	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	94	1	-	-	-	-	-	-	-	-	-	1	-	-	20		1	
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	9	0	
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'86		00%			00%			00%										
'94		00%			00%			00%										
'99		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'86	0	Dec:	-			
												'94	20		-			
												'99	0		-			
Echinocereus engelmannii																		
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	4	0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'86		00%			00%			00%										
'94		00%			00%			00%										
'99		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'86	0	Dec:	-			
												'94	0		-			
												'99	0		-			
Gutierrezia sarothrae																		
S	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	94	1	-	-	-	-	-	-	-	-	-	1	-	-	20		1	
	99	1	-	-	-	-	-	-	-	-	-	1	-	-	20		1	
Y	86	25	-	-	-	-	-	-	-	-	-	25	-	-	833		25	
	94	4	-	-	-	-	-	-	-	-	-	4	-	-	80		4	
	99	4	-	-	-	-	-	-	-	-	-	4	-	-	80		4	
M	86	209	-	-	-	-	-	-	-	-	-	209	-	-	6966	6	209	
	94	23	-	-	-	-	-	-	-	-	-	23	-	-	460	8	23	
	99	23	-	-	-	-	-	-	-	-	-	23	-	-	460	7	23	
D	86	4	-	-	-	-	-	-	-	-	-	4	-	-	133		4	
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	2	-	-	-	-	-	-	-	-	-	-	-	2	40		2	
X	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'86		00%			00%			00%			-93%							
'94		00%			00%			00%			+ 7%							
'99		00%			00%			07%										
Total Plants/Acre (excluding Dead & Seedlings)												'86	7932	Dec:	2%			
												'94	540		0%			
												'99	580		7%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total
		1	2	3	4	5	6	7	8	9	1	2	3	4			
Juniperus osteosperma																	
Y	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	99	2	-	-	-	-	-	-	-	-	-	2	-	-	40		2
X	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	40		2
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
		'86	00%			00%			00%								
		'94	00%			00%			00%								
		'99	00%			00%			00%								
Total Plants/Acre (excluding Dead & Seedlings)												'86	0	Dec:	-		
												'94	0		-		
												'99	40		-		
Juniperus osteosperma (chained)																	
D	86	2	-	-	-	-	-	-	-	-	2	-	-	-	66		2
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
		'86	00%			00%			00%								
		'94	00%			00%			00%								
		'99	00%			00%			00%								
Total Plants/Acre (excluding Dead & Seedlings)												'86	66	Dec:	100%		
												'94	0		0%		
												'99	0		0%		
Opuntia spp.																	
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0
	94	3	-	-	-	-	-	-	-	-	3	-	-	-	60	4	3
	99	3	-	-	-	-	-	-	-	-	3	-	-	-	60	4	3
D	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	94	1	-	-	-	-	-	-	-	-	-	-	-	1	20		1
	99	1	-	-	-	-	-	-	-	-	-	-	1	-	20		1
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
		'86	00%			00%			00%								
		'94	00%			00%			25%			+ 0%					
		'99	00%			00%			25%								
Total Plants/Acre (excluding Dead & Seedlings)												'86	0	Dec:	0%		
												'94	80		25%		
												'99	80		25%		

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Pinus edulis																		
S	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	-	-	-	1	-	-	-	-	-	1	-	-	-	20		1	
Y	86	3	-	-	-	-	-	-	-	-	3	-	-	-	100		3	
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20	-	1	
X	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'86		00%			00%			00%										
'94		00%			00%			00%										
'99		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'86	100	Dec:	-			
												'94	0		-			
												'99	20		-			
Purshia tridentata																		
S	86	5	-	-	-	-	-	-	-	-	5	-	-	-	166		5	
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	-	-	-	4	-	-	-	-	-	4	-	-	-	80		4	
Y	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	94	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
	99	1	2	1	-	-	-	-	-	-	4	-	-	-	80		4	
M	86	-	-	1	-	-	-	-	-	-	1	-	-	-	33	15	35	
	94	27	1	-	-	-	-	-	-	-	28	-	-	-	560	12	34	
	99	3	3	9	1	2	1	-	-	-	19	-	-	-	380	13	38	
D	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	94	3	-	-	-	-	-	-	-	-	3	-	-	-	60		3	
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
X	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	60		3	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'86		00%			100%			00%			+95%							
'94		03%			00%			00%			-28%							
'99		30%			48%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'86	33	Dec:	0%			
												'94	640		9%			
												'99	460		0%			

A Y G R E		Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Quercus gambelii																		
S	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	-	-	-	-	-	-	1	-	-	1	-	-	-	20		1	
Y	86	-	8	1	-	-	-	-	-	-	-	9	-	-	300		9	
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	1	-	-	2	-	-	-	-	-	3	-	-	-	60		3	
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	99	-	-	-	2	-	-	-	3	-	5	-	-	-	100	50	35	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'86		89%			11%			00%										
'94		00%			00%			00%										
'99		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'86	300	Dec:	-			
												'94	0		-			
												'99	160		-			
Yucca spp.																		
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	94	2	-	-	-	-	-	-	-	-	-	2	-	-	40	14	29	
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
D	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	1	-	-	-	-	-	-	-	-	-	-	1	-	20		1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'86		00%			00%			00%										
'94		00%			00%			100%										
'99		00%			00%			100%			-50%							
Total Plants/Acre (excluding Dead & Seedlings)												'86	0	Dec:	0%			
												'94	40		0%			
												'99	20		100%			